

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-013164**Date Inspected:** 20-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1100**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

A). Field Splice W2/W3

B). Field Splice W1/W2

C). Field Splice E2/E3

D). Field Splice E3/E4

A) Field Splice W2/W3

The QAI also observed the initial Ultrasonic Testing (UT) of the deck plate field splice identified as WN: 2W-3W-A. The testing was performed by the QC technician Steve McConnell utilizing a Krautkramer USM 35X.

Mr. McConnell also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 during the examination of the CJP. The QC technician performed the required longitudinal wave utilizing a 1" diameter transducer for base metal soundness and a .75 x .75 rectangular transducer to perform the shear wave testing during the testing for weld soundness.

B) Field Splice W1/W2

The QAI observed the Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S3. The welding was performed by the welding personnel

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## WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

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Kenneth Chappell ID-3833 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1011 Rev. 0 to correct the excessive root openings of the double-v-groove joint identified as per the AWS joint designation B-U3b. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to perform the monitoring and verifying the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. Later in the shift the QAI observed the QC inspector monitoring the welding parameters and were noted as 135 amps. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

The QAI also observed the Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S13,S16 and S17. The welding was performed by the welding personnel Jordan Hazelaar ID-2135utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1011 Rev. 0 to correct the excessive root openings of the double-v-groove joint identified as per the AWS joint designation B-U3b. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to perform the monitoring and verifying the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. Later in the shift the QAI observed the QC inspector monitoring the welding parameters and were noted as 140 amps. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

### C) Field Splice E2/E3

The QAI also observed the continued Flux Cored Arc Welding (FCAW-G) of the side plate field splice identified as Weld Number (WN): 2E-3E-E. The welding was performed by the welding operator Rory Hogan ID-3186 and utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3042A-1 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector James Cunningham for the QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the transverse field splice. The QAI observed the QC inspector's verifying the welding parameters and were noted as follows: 243 amps, 22.6 volts and a travel speed measured at 186mm per minute for the FCAW-G. The surface temperatures and the calculation of the heat input were also verified by the QC inspector and were noted as follows: the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius and the heat input of 1.79 kJ/mm.

### D) Field Splice E3/E4

The QAI observed the Magnetic Particle Testing (MPT) of the back gouged surface of the edge plate field splice identified as WN: 3E-4E-B. The MPT was performed by the QC Technician Tom Pasqualone utilizing the MPT procedure identified as SE-MT-CT-D1.5-101 Rev. 4. The conclusion of the initial test the Mr. Pasqualone noted an indication approximately 5mm long. ABF personnel Jin Quan Huang performed the additional grinding for a depth of approximately 3mm. At this time Mr. Pasqualone performed the second MPT and no indications were noted.

The QAI also observed the back gouging of the side plate field splice identified as WN: 3E-4E-E. The operator

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## WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

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Bryce Howell utilized the plasma arc cutting process to perform the back gouging of the "B" side CJP.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector's and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW and the FCAW-G processes appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed, except as noted, appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs, below, illustrate the work observed during this scheduled shift.



### Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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**Inspected By:** Reyes, Danny

Quality Assurance Inspector

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**Reviewed By:** Levell, Bill

QA Reviewer